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ABSTRACT

This annotated, 30-item bibliography of books, reports and articles is divided into topics identical to those described in SO 001 849. Notable among the items in this issue are: the Proceedings of the Fifth Princeton Conference on Population Genetics and Demography; a journal article on the genetic implications of population control; and several items dealing with the physiological effects of oral contraceptives. ED 049 101 is another document in the same series. (JLB)

Current Publications in Population/Family Planning

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Number 14

June 1971

Demography and Social Science

Majumdar, H. and Mindel C. Sheps. "Estimators of a Type I Geometric Distribution from Observations on Conception Times." *Demography*, 7 (3): 349-360. August 1970. 14-1

"In order to study distributions of fecundability, Potter and Parker fitted a Pearson Type I geometric distribution (with parameters a and b) to data from the Princeton Fertility Study. They, and subsequently other authors, estimated a and b from the observed moments of the month of first conception. A critical analysis of this method has shown that moment estimators of a and b are moderately reliable only within a specified range of values of a . Outside this range, either the estimators are extremely inefficient or their variances are not defined at all. Caution should therefore be taken in adopting this procedure. Furthermore, no invariant estimate is defined when a is less than 2. It seems preferable to derive maximum likelihood estimates which have certain optimal properties and are defined for all permissible (i.e. positive) values of a and b .

"For large samples, the authors present: the covariance matrix (where defined) of the moment estimators, methods of obtaining maximum likelihood estimates and their covariance matrix, and the variances of estimates of specified moments of the fecundability of the sample. Results were obtained for three sets of data; in all cases, the maximum likelihood estimates fit the data better than do the moment estimates. Despite a substantial improvement, however, the fit is still poor for the two sets of data from the Princeton Fertility Study. Possible explanations are: (a) that the departures from the assumption of constant fecundability for each couple are sufficient to produce the poor fit, (b) that the data are inaccurate, or (c) that the method of defining the sample of women from whom the data were obtained resulted in an over-representation of short conception times. The relative importance of these factors is difficult to establish." (Authors' abstract.)

Osborne, Richard H. (ed.). "The Genetic Restructuring of Human Populations." *Social Biology*, 17 (4): 253-352. December 1970. 14-2

Proceedings of the Fifth Princeton Conference on Population Genetics and Demography held 6-8 November 1969. Papers included are: L. Bumpass, "The Trend of Interfaith Marriage in the United States;" C. P. F. de Camargo, et al., "Marriage Patterns and Fertility in São Paulo;" B. K.

Eckland, "New Mating Boundaries in Education;" C. E. Glick, "Interracial Marriage and Admixture in Hawaii;" P. C. Glick, "Intermarriage among Ethnic Groups in the United States;" C. V. Kiser, "Changing Patterns of Fertility in the United States;" K. Morgan, "Gene Flow and Structure of United States Negro Populations;" and L. D. Sanghvi, "Changing Patterns of Caste in India." The issue also contains 12 book reviews, 15 periodical abstracts, a complete 1970 index for the journal *Social Biology*, and table of contents for all four issues of Volume 17.

Rosen, Bernard C. and Alan B. Simmons. "Industrialization, Family and Fertility: A Structural-Psychological Analysis of the Brazilian Case." *Demography*, 8 (1): 46-69. February 1971. 14-3

"This paper addresses itself to some linkages between macro-social structure (industrialization, social class), social psychological variables (husband-wife decision making), psychological variables (attitudes), and fertility. A total of 726 currently mated women with proven fertility in five Brazilian communities were interviewed to determine various attitudes, their work experience, their participation in family decisions, their fertility ideals, and actual fertility. The five communities were selected along a rural-urban-industrialization continuum to include a village, two non-industrial cities, and two industrial cities (one of which was São Paulo). Family size in the industrial cities was small in all social strata, while in the non-industrial cities family size was large in the lower strata and declined in the upper strata. Further analysis revealed that smaller family size is associated with generally higher levels of status among women—higher educational levels, greater social contacts and more skilled employment, and equality in family decision making. Our analysis supports the hypothesis that industrialization influences fertility through shifts in the social status of women, both in their work and at home. New education and work opportunities facilitate the emergence of modern conceptions of the role of women in society and egalitarian decision making in the family. These attitudes and patterns of husband-wife interaction are related to smaller family size ideals and lower fertility." (Authors' abstract.)

Sly, David R. "Minority Group Status and Fertility: An Extension of Goldscheider and Uhlenberg." *American*

Journal of Sociology, 76 (3): 443-459. November 1970. 14-4

In another study, Goldscheider and Uhlenberg rejected the *characteristic hypothesis* that, when minority groups share the social characteristics of the dominant group in a society, they share the same fertility values. This paper presents a further test of that hypothesis and is based on an analysis of data from the 1960 U. S. Census. The dependent variable, fertility, is measured as the number of children ever born per 1,000 ever married women aged 35-44. Region is used as a control variable, and education, occupation and income as the independent variables in comparing white and non-white fertility.

The study concludes that if race is used as a measure of minority group status, minority group status does not make an independent contribution to fertility when the South as a region is eliminated from the study . . . the data give strong support to the characteristics hypothesis, that is, education, husband's income, and region appear to have the main effect on fertility of the factors considered when the South is eliminated from the analysis."

United Nations Statistical Office. *Demographic Yearbook, 1969, 1970*. 694 pp. 14-5

The twenty-first annual issue contains a world summary by country, statistics on population, natality, mortality, life expectancy, nuptiality and divorce. A special topic on natality statistics brings up to date the data in the 1965 *Yearbook* which last featured this section. Historical trends of live births and fetal deaths are shown, as well as data for live births by age of mother, birth order, age and occupation of father, legitimacy of father, type of birth, and duration of married life. Gross and net reproduction rates from 1963 to 1968 are also shown. A short chapter on recent changes in world fertility and another on technical notes to the tables comprise the introduction. In English and French with a cumulative subject matter index, indicating year of issue and time coverage.

U. S. Department of Commerce, Bureau of the Census. *Previous and Prospective Fertility: 1967*. U. S. Government Printing Office, Series P. 20, No. 211, 26 January 1971. 35 pp. 14-6

A sample survey of married women 18-39 years of age, conducted by the U. S. Bureau of the Census in March 1967, showed that

respondents 18 and 19 years of age expected to have smaller completed families (2,720 children per 1,000) compared with respondents 35-39 years of age, whose expected completed family size was 3,229 per 1,000, with an almost regular increase between these two groups. This would mean a replacement level of 118 percent for the 18 and 19 year old group compared with 143 percent for the older women. This family size expectation should result in declines in average family size in the near future. Detailed data are presented on children ever born and expected future fertility, by various socioeconomic characteristics of the women.

Wyon, John B. and John E. Gordon. *The Khanna Study: Population Problems in the Rural Punjab*. Harvard University Press, 1971. 437 pp. 14-7

Description of a field study of population in rural India between 1953 and 1959, and selected findings from a follow-up investigation 10 years later. Designed by members of Harvard's School of Public Health in collaboration with the Governments of India and the Punjab State, the study's aim was "to trace the relation between changes in the size of a population, and in its environment, as they affect community health and social well-being." It documents demographic variations of a defined population over a prolonged period, describes a trial contraceptive program among the poorly educated, and researches factors influencing population dynamics. Summaries appear at the end of each chapter, and the final chapter presents results from the 1969 follow-up study. Supplementary material is contained in the 5 appendices, the 11-page glossary, the 4-page list of study papers, and the 19 pages of references. Included also are 119 figures in the text, 16 in the appendices; 42 tables in the text, 1 in an appendix; and a 32-page index.

Human Reproduction and Fertility Control

Ben Cheikh, Tawhida. "Etude Comparative de 1.000 Cas D'Insertion de Sterilet Dans Le Post Abortum Immédiate et de 1.000 Cas D'Insertion de Sterilet Dans Les Conditions Normales." Mimeo, presented at the Journées Médicales, Tunisia, April 1970. 6 pp. 14-8

A comparison of women who had immediately post abortum IUD insertions (up to four days after abortion) with women who had IUD insertions under the regular family planning program indicates that in terms of side effects, removal rates, expulsion rates, and pregnancy rates, there are no significant differences between the two groups. The author concludes that "a program of immediately post abortum IUD insertions can be carried out without detriment to the health of the women when such insertions are performed in a competent and aseptic manner."

The samples of women in this study are somewhat different on three characteristics:

	Post abortum	Regular program
Average age	31.2	28.6
Average number of living children	5.4	4.5
Average number live births	6.3	5.2

Bernard, R. I. "IUD Performance Patterns—a 1970 World View." *International Journal of Gynecology and Obstetrics*, 8: 926-940. November 1970. 14-9

Reviews the statistical findings of the International IUD Programme, conducted under the auspices of The Pathfinder Fund, covering one year of experience for about 14,000 women participating in 50 studies, located in 30 countries throughout the world, with about 95 percent follow-up. The "pertinent" closure rate for all studies combined was 11 percent, of which pregnancies accounted for 1.8 percent, expulsions for 3.7 percent and removals for bleeding and pain for the remaining 5.5 percent. Regional differences in the major parameters are discussed. The author concludes, "It should be stressed, that through this world-spanning evaluation scheme, the IUD method of contraception was shown to be a powerful tool in the presently existing armamentarium of fertility control and that its relative success lies primarily with the attitude of both conveyor and acceptor, rather than with the IUD."

Buehman, M. I. "A Study of the Intra-uterine Contraceptive Device with and without an Extracervical Appendage or Tail." *Fertility and Sterility*, 21: 348-355. April 1970. 14-10

Over a four year period involving 1,295 patients, the Lippes loop and Birnberg bow, both with and without tails, were employed in an anti-fertility study. The complication rate for tailed devices did not differ from that of their shorter counterparts. The tailed Birnberg bow seemed to exhibit a lower pregnancy rate than the tailless variety. But since the perforation for both types of Birnberg devices was so high, these IUDs were subsequently replaced by the Lippes loop. The most significant advantage of a tailed device is the simplicity with which its location can be ascertained; in cases which were previously thought to be expulsions, examination of the patient often disclosed that the device had perforated the uterus.

Goldzieher, Joseph W. "An Assessment of the Hazards and Metabolic Alterations Attributed to Oral Contraceptives." *Contraception*, 1 (6): 409-445. June 1970. 14-11

"Survey-type data have failed to yield any evidence for an increase in thromboembolic disease in users of oral contraceptives. Evaluation of this and related information is complicated by the fact that there has been a rapid rise in idiopathic thromboembolic disease, unrelated to use of oral contraceptives, in several developed countries. Retrospective case-control studies both in England and the United States point to an increased risk of thromboembolic disease, about sixfold, in oral contraceptive users. There are significant differences between the two sets of studies with respect to the age-factor, and the risk of cerebral thrombosis. These studies are critically examined in terms of the problems inherent in this type of statistical approach, and they are felt to be less than conclusive. The fact that these studies yield similar conclusions may be related to the fact that they are of the same basic design and carried out at a time when unavoidable biases of the same sort may affect them all. It is pointed

out that risk of death from thromboembolic disease, at the maximum estimate derived from these studies, is still less than the risk from the use of other contraceptive modalities, when the maternal mortality from the use of these less effective methods is included." (Author's abstract.)

Studies dealing with other major side effects, such as carcinogenesis, metabolic alterations, and certain endocrine effects are also reviewed, and the author concludes that evaluation of published data in this field is "difficult because polemical as well as other irrelevant factors have crept into the picture."

Helbig, Donald W., Habib R. Siddiqui, Samuel B. Hopkins, Paul A. Harper, and Rowland V. Rider. "IUD Retention in West Pakistan and Methodology of Assessment." *Demography*, 7 (4): 467-482. November 1970. 14-12

"In 1967 there was a sample survey of women who had had IUD insertions in West Pakistan during the first 18 months of the Pakistan National Family Planning Program which began in July 1965. The 12-month retention rate, including reinsertions, per 100 respondents was 56. Certain gross relationships between respondent characteristics and IUD retention were found. Respondents age 35+ and with 5+ living children and respondents who had insertions within two months postpartum had relatively high retention rates. Respondent characteristics associated with low retention rates included: age 35+ with 0-4 living children; reasons other than family planning reported as reasons for insertion; less than one-half hour travel time required to obtain insertion; not informed at time of insertion about side-effects of IUD; and insertion during last six months of 1966. Consistency of response was evaluated by reinterviewing a sample of respondents. The significance of the 43 percent non-response rate was evaluated by making further attempts to interview a sample of non-respondents." (Authors' abstract.)

Herzberg, Brenda N., Anthony L. Johnson, and Susannah Brown. "Depressive Symptoms and Oral Contraceptives." *British Medical Journal*, 4 (5728): 142-145. 17 October 1970. 14-13

"Of 261 women who completed a self-rating scale for measuring depression, 168 were taking oral contraceptives and 93 were using physical methods of contraception. Of the group of women taking oral contraceptives 6.6 percent were more severely depressed than any of the control group. There was a significant variation in the depth of depression related to the day of the menstrual cycle in the control group. This association was not found in the oral contraceptive group, where premenstrual depression was limited to the one or two days preceding menstruation.

"Women taking a contraceptive containing lynestrenol 2.5 mg and mestranol 0.075 mg showed a significantly increased incidence of pessimism, feelings of dissatisfaction, crying, and tension, compared with women taking other oral contraceptives and the control group." (Authors' summary.)

The study was conducted at the clinic of the Family Planning Association in Surrey, England. The questionnaire used consisted of 18 sections of the Beck self-rating scale,

combined with nine sections of the Picket scale designed to detect depressive symptoms in a non-psychotic population.

Human, W. H. W. "Role of Drug Reaction Monitoring in the Investigation of Thrombosis and the Pill." *British Medical Bulletin*, 26: 248-256. September 1970. 14-14

Investigations of oral contraceptives in the United Kingdom are reviewed as examples of how the Committee on Safety of Drugs carries out its function in the continuous surveillance of all drugs. To study the etiology of thromboembolism and the use of oral contraceptives, the committee recruited a team of 40 part-time medical officers, thus keeping down the cost of the field investigation. It was found that the total mortality from thrombosis among users of oral contraceptives was about three per 100,000 women 20-34 years of age, representing the majority of users, and nine per 100,000 women 35-44 years of age, representing the minority. It is suggested that drug-induced morbidity, which is much more common than mortality, can be studied in comparatively limited populations by individual experts, an example being the study of nonfatal thromboembolism conducted by Vessey and Doll in 1968. Through international cooperation, studies have been made of the association between blood groups and thrombosis and also of the effects of estrogen doses. The fact that similar results were obtained in entirely different combinations of patients, studied by different methods, added greatly to the strength of the conclusions drawn from the individual results. The author concludes that "coupled with many other safety problems that have been investigated by the Committee, the results obtained so far have justified the efforts made by individual commissions to report their experience to the Committee, and it is suggested that, if the reporting of adverse reactions can be increased, more hazards will be identified and investigated and greater drug safety will be achieved."

Kleinman, R. I. (ed.). *Comments on Steroidal Contraception: A Report of the Meeting of the International Planned Parenthood Federation Central Medical Committee and Its Advisers, to Discuss the Known and Postulated Side-Effects of Steroidal Contraception, 11-12 April 1970, N. Y., International Planned Parenthood Federation, London, 1970.* 55 pp. 14-15

Presents discussions of known or postulated association of steroidal contraception with thromboembolism, cancer, genetic damage, liver damage, hypertension, obesity, depression, and changes in subsequent fertility; in pituitary function, in lactation, in metabolism, in libido, and in changes in age at menopause. Contains the statement of the IPPF Central Medical Committee which concludes as follows: "The committee recognizes that, while any innovation in medicine carries with it certain risks which are by their nature unpredictable, the availability and uses of steroidal contraceptives is an important fact in maternal health and in the health of the family. The committee feels, as a result of its deliberations, that the continued use of steroidal contraception is fully justified. The possible risks must be weighed against the probable benefits. In evaluating the suitability of different methods of contraception, relative effectiveness is significant."

Moulding, T., D. Onstad, and J. A. Sharbaro. "Supervision of Outpatient Drug Therapy with the Medication Monitor." *Annals of Internal Medicine*, 73: 559-564. October 1970. 14-16

The medication monitor is a calendar-month medication dispenser that permits the study of irregular ingestion of medication by outpatients. The study showed that 31 percent of 122 supposedly reliable tuberculosis outpatients took less than 70 percent of their medication for one month or more. With the use of the monitor it was possible to identify 28 percent of patients who required special attention to insure regular drug ingestion. The authors feel that the medication monitor should be particularly useful in studies of oral contraceptives.

Pelrine, E. W. *Abortion in Canada.* New Press, 1971. 133 pp. 14-17

Discusses the legal, moral, and medical aspects of induced abortion in Canada. Presents the findings of two surveys: one of the practices of Canadian hospitals with regard to abortion, and the other, of professional women in Canada concerning their personal experience with abortion.

Spellacy, W. N., W. C. Bhui, S. A. Birk, and S. A. McCreary. "Studies of Ethynodiol Diacetate and Mestranol on Blood Glucose and Plasma Insulin. II. Twelve Month Oral Glucose Tolerance Test." *Contraception*, 3: 185-194. March 1971. 14-18

Blood glucose and insulin levels were measured during oral glucose tolerance tests of 67 women both before and after a 12-month usage of an oral contraceptive consisting of ethynodiol diacetate and mestranol. The women were divided essentially into a normal group of 54 (Group I) and a borderline abnormal group of 12 (Group II) as shown by their initial glucose tolerance tests. One woman had an initial abnormal blood glucose level, but it did not change during the study. After one year of oral contraception, fasting levels of glucose and insulin had not changed significantly in either group. However, women in Group I showed a greater tendency for decreased glucose tolerance than women in Group II. In fact one-half of the women in Group II exhibited an increased glucose tolerance. Although the average initial insulin values in Group II exceeded those of Group I, insulin values of Group I remained elevated after a glucose tolerance test, while those of Group II did not change significantly.

Family Planning Programs

Hartfield, V. J. "The Role of the Nurse in a Family Planning Programme." *Contraception*, 3: 105-114. February 1971. 14-19

Of 783 insertions of Lippes loop D in a Family Planning Clinic in Ileshaaland, Southwest Nigeria, 377 were done by nurses and 406 by physicians. There were no perforations and no significant differences between the two groups in the rates of first expulsions and removals for medical or personal reasons. The insertion techniques of doctors were slightly superior to those of nurses, particularly early in the nurses' experience. The author concludes that the use of paramedical personnel in a developing country is

highly desirable because they are more available than physicians, are closer to the community, charge less, and can free the doctor to assume his role in "overall administration and organization, introducing and teaching new techniques and methods, and dealing with major complications and difficulties." The nurses' tasks are insertion of the loops, routine follow-up and treatment of minor complications, recruitment of new users, and education of the public. "She can only fulfill these roles effectively if she has the proper backing of a doctor who will relieve her of the worry of the management of major complications and medical conditions beyond her terms of reference."

Mundigo, Alex I. and J. Mayone Stycos. *Family Planning in Honduras, A Review of the National Program.* International Population Program. Cornell University, December 1970. 97 pp. 14-20

The International Population Program at Cornell University undertook, at the request of the Agency for International Development, a comprehensive evaluation of the family planning aspects of the Maternal-Child Health Program in Honduras, which has one of the world's highest birth rates.

From the administrative standpoint, the Program's Medical, Nursing, Social Work, Health Education, and Data Collection Departments were evaluated, and special surveys were done on clinic work, knowledge and attitudes, and follow-up. The determination of short- and long-range specific goals in terms of change in birth rates was set as a priority action, and a mathematical model for resource allocations, constructed at Cornell, was used and is described. Additional improvements in program management involve greater concentration on integrated data analysis, improvement of techniques of data collection, follow-up and education, and improved allocation of greater resources than are presently committed. (A set of suggested forms and instructions is included.)

Present and projected program resources will not substantially reduce the present crude birth rate of about 49 per thousand by 1980. Budgetary expansion alone might make a reduction to 44 per thousand feasible, but additional medical resources will also be needed to achieve the desired rate of 42 per thousand.

Polgar, S. and F. Rothstein. "Family Planning and Conjugal Roles in N. Y. C. Poverty Areas." *Social Science and Medicine*, 4: 135-139. July 1970. 14-21

Household interviews of women 18-39 years of age, married, and having at least one child were conducted in selected poverty areas of New York City in 1965 to study the relationship between conjugal patterns and contraceptive usage. The results showed that in joint conjugal relationships more male methods were used among Negro families and more female methods among Puerto Rican families. In both ethnic groups, however, when the woman has more of the responsibility, she appears to be more ready to adopt the pill and the IUD than other methods. This investigation is part of an action research project initiated by the Planned Parenthood Federation of America to evaluate the impact of the newer contraceptive methods on the attitudes, practices, and natality of impoverished urban Americans and the effectiveness of different service patterns.

Programme Evaluation Organisation, Planning Commission, Government of India. *Family Planning Programme in India: An Evaluation.* Department of Family Planning, Ministry of Health, Family Planning and Works, Housing and Urban Development. New Delhi, April 1970. 267 pp.

14-22

This is a report of an extensive two-phased study of the Indian Family Planning Program undertaken by the Program Evaluation Organisation of the Indian Planning Commission. The first phase was a general purpose study of the program organization, administration, training, services, and accomplishments in 35 sample districts involving interviews with some 6,000 male respondents and 271 staff members during September-December 1968. The results of this phase of the study are presented and analyzed in six chapters: "Background;" "Organization and Administration;" "Education and Motivation;" "Knowledge, Attitude and Views;" "Accomplishment;" and "Training." The second phase studied a sample of about 6,000 program acceptors and 1,372 spouses of acceptors in nine districts. Chapters reporting on this aspect of the study are: "Background of the Adopters;" "Analysis of Data Relating to Pre-Adoption Period;" "Analysis of Data Relating to Post-Adoption Period;" and "Views and Reactions of the Spouses and the Adopters." Results documenting the text are presented in 151 pages of appendix tables.

United States Department of Health, Education, and Welfare, Office of the Assistant Secretary for Planning and Evaluation. *Family Planning Service Program, May 1970.* 109 pp.

14-23

An operational analysis of a family planning program. Sections cover "Communications with the Patient," "Services Offered in the Clinic," and "Characteristics of Facilities and Personnel." Specific topics include mechanisms for promoting patient registration, follow-up procedures, effectiveness of contraceptive methods, facility location, manpower and clinic costs, and eligibility requirements and fee schedules. A final section contains 18 recommendations arising from conclusions drawn from this analysis. Data and observations are documented and illustrated.

World Health Organization. *Health Aspects of Family Planning. Report of a WHO Scientific Group, Technical Report Series No. 442, Geneva, 1970.* 50 pp.

14-24

A report of the Scientific Group on the Health Aspects of Family Planning, which met in Geneva, 24-30 June 1969. It reviews the scope of family planning activities in a health context and methodological approaches for assessing both the impact of family planning on health and the provision of family planning care. Fourteen subjects recommended for research are listed.

Population Policy

Bajema, C. J. "The Genetic Implications of Population Control." *BioScience*, 21: 71-75. 15 January 1971.

14-25

Two possible consequences of policies favoring continued population growth are (1) "... military aggression coupled with genocide to attain additional living space" and (2) survival of undesirable genetic pat-

terns which appear to be favored in stress situations. Eugenic distribution of births can be achieved in a society which is urbanized and highly educated and has complete control over its fertility and has thus achieved a zero or negative population growth. A society that fails to achieve these reproductive patterns, however, will have to adopt methods of population control either through mutual coercion, such as taxation, or through compulsory measures restricting family size or granting of "marketable baby licenses." The author believes that once compulsory programs aimed at controlling population size have been adopted, compulsory control of genetic quality will follow quickly.

Noonan, J. T. (ed.). *The Morality of Abortion: Legal and Historical Perspectives.* Harvard University Press, 1970. 276 pp.

14-26

This volume is the outcome of the International Conference on Abortion, sponsored jointly by the Joseph P. Kennedy, Jr., Foundation and the Harvard Divinity School, which was held in Washington, D. C. in September 1967. It includes chapters on the history of Catholic doctrine with regard to abortion, on the Protestant ethical approach, and on the concept of the sacred condominium between the progenitors and the state. The appendices contain notes on the Abortion Act of 1967 in the United Kingdom, statistics on abortions and maternal death after illegal abortions in some European countries, and a chapter on constitutional balance by David W. Louisell and the editor.

Smith, R. G. "Changing Hawaii's Abortion Laws." *Pacific Health*, 3: 2-4. 1970.

14-27

A questionnaire survey of the Hawaii Medical Association, to determine the attitude of its members toward legalizing abortion, was conducted by the Maternal and Child Health Section of the School of Public Health of the University of Hawaii for the Hawaii State Legislature, prior to the amendment of the abortion law of that state. The findings were presented before the Senate Committee on Public Health, Welfare and Housing, whose chairman stated: "The detailed and concise summary of the findings contributed greatly to the understanding of the members of the committee with reference to the attitude of the physician. The greatest impact was the conclusion drawn from these studies indicating that a substantial majority of the physicians were in favor of either repealing or at least changing the archaic laws on abortion. Our committee was grateful to the School of Public Health for its commendable effort." This is an example of "how university resources can be utilized to give services to the community, with the ultimate goal of effecting social changes."

General

Center for Population Research, National Institute of Child Health and Human Development. *The Federal Program in Population Research.* US Department of Health, Education, and Welfare, 31 December 1970. 68 pp.

14-28

An inventory of population research supported by federal agencies during the fiscal year 1970. Includes an investigator index and a citation for each of 664 research

projects, classified by subject category. The three appendices contain the classification used for grant-making, a table of federally supported projects by source of funds, and one by subject area.

International Bank for Reconstruction and Development. *World Bank Atlas.* September 1970. 13 pp.

14-29

This fifth edition contains the mid-1968 population, the 1968 per capita-gross national product, and the average annual growth rates of both from 1961 to 1968 for 55 countries in Africa, 41 in Asia, 35 in Europe, 30 in North and Central America, 13 in South America, and 17 in Oceania and Indonesia. For countries of over one million population these figures are also given separately. Continental maps are number coded for easy country identification.

United States National Center for Health Statistics. *Health Manpower Source Book, Section 21, Allied Health Manpower, 1950-80.* Public Health Service Publication, No. 263, 1970. 107 pp.

14-30

A source book summarizing statistics on available and projected allied health manpower in the medical, dental, and environmental health occupations. Within these occupations, it covers "professional, technical, and supportive workers in the fields of patient care, public health, and health research who engage in activities that support, complement, or supplement the professional functions of physicians, dentists, and registered nurses; as well as personnel engaged in organized environmental health activities who are expected to have some expertise in environmental health." One hundred and twenty-five health occupations, with 250 alternative titles, are listed. An inventory of federal programs that support training in health occupations appears in an appendix.



THE POPULATION COUNCIL

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learn to be a good hunter. We need meat for the family, and the hide and bones and sinew and all the good things the Deer People give us. Besides, I want to show that I am a man and can bring these things home. I want Mother to be proud of me. I want to do my share."

"Then listen well, Tuvala. If we must wait for the deer to come, then we must hide our scent. When we come off the rockslide and are all hot from our climb, we must put off our warm fur robes - for they hold the man scent the longest. We must wash there in the snow until our bodies are cool and clean again."

"That will not be hard, Grandfather. We wash here every morning after our run at daybreak."

"That may be one of the reasons for that custom, Tuvala."

"I understand that now, Grandfather."

"When we have washed, we must take some of those little berries from the juniper tree. We will rub them in our hands, and pass our hands through our hair and over our bodies. That will help to keep our scent from the Deer People."

"Ah! Then we can hide near where the deer will have to pass and they will go right by. Perhaps we can make a shot at them there."

"Perhaps. You with that new Bow-thing that your uncle has made for you, and the arrows like little swift spears, you might be able to get off several shots. But I must hunt in the old way. I must stand tall with my atlatl throwing stick and spear. One shot I may get, and then who can tell which way the deer may run. It is better to let them pass us and go up the canyon."

"Why do you not try the bow too, Grandfather?"

"We have brought many deer home to the People, my old spear and I. When I die, it will lie close by my side in the grave. We will journey together into the Land of the Dead, and there we shall hunt again in the old way. Yes, boy, this Bow-thing that has newly come to the People is good. I see how fast the little darts fly and how true. I see how there has come to be a new way in the hunting where man can creep close to the Hunted Ones and his shots can be many and sure. These new ways are good. There is more meat for the People. But the hunters must not forget some of the old ways too. They must not forget the old songs and the prayer offerings. Their hearts must be good and they must remember the things which must be done for the spirits of the Hunted. Tuvala, do you remember what I have taught you?"

"Yes, Grandfather. We make prayer feathers for all the creatures we hunt. We dance for them and sing our thanks that they have given us their lives. When an animal falls to our weapons, or is caught in the snares, we must always remember to give a pinch of cornmeal as feed for its spirit as it makes its own journey down to the Land of the Dead. This is the right way."

"That is good, Tuvala."

"And there are the other things you have taught me. To be sure of my shot. To use all of each animal. Never to shoot more than you can carry or send for. If there is a choice, let the Deer Mothers go - so there will be more of the Deer People for the next hunting."

These things I remember."

"I am proud of you, my grandson. It would seem that your heart was good. Now perhaps you are ready to be a hunter. Let us go."

The old man and his grandson gathered their weapons, climbed swiftly up from the house, and crossed the terraced court. From several of the dwellings now, thin threads of fragrant pinyon smoke wound up toward the arch of the great cave high above them. Golden firelight spilled from a hatchway and a shadow flickered against the cave's domed ceiling. From somewhere came the ring of stone on stone as corn for the morning meal was ground.

In silence, the two made their way up to the canyon rim using the hand and toe holds chipped in the cliff face. By the Deer Shrine at the top of the trail where a path branched out to the mesa top fields, they paused. Each placed a prayer feather bundle and stood a moment asking that luck attend their hunting, and that the Deer People might understand their need. Then they started off down the canyon.

In the brush, far down the canyon the buck snorted and tossed his head high to draw the wind into his flaring nostrils. He was nervous still from the running. Wolves, two big ones, had crept, bellying up the wind until they were almost on the little herd. Then the running had begun. The cry of the wolves was right among them. They had crashed and scattered blindly through the tangled juniper scrub, each taking his own path. Sometimes, when the wind brought them warning or when they heard the hunting call of the wolves, the herd would try to stay together. No wolf liked to face that circle of slashing hooves. But tonight there had been no warning - just the cry and the running.

The snow was not deep and the running was fast. With good ground the deer had little to fear from just two wolves. The wolves themselves probably had little hope of making a kill. But there was always a chance. A deer, sick or old, or perhaps injured in the tearing flight through the scrub. There was always a chance for two wolves to make a kill.

The buck tore on, still heading into the wind, alone now. Close behind a single wolf followed with an effortless lope. Followed for the thrill of running, followed for the chance of a kill. The buck stumbled, broke stride for the merest fraction of a moment. He felt the sharp nip and sudden pain of a bite low on his flank. He whirled then, in panic and in pain and hooked blindly with his sweeping antlers at the dark shape behind. There was a squeal of surprise from the following wolf. The buck felt his weak muscles crack from the strain as he lifted and flung this hated thing away from him. The wolf hit the snow covered ground with a grunt. Hit, rolled, shook himself, and came on again. The buck backed away, head held high now, ready to rear and strike with the sharp fore hooves. He backed, ready now, waiting for the wolf's next move. But the wolf had stopped. It stood watching the buck. From somewhere back in the darkness the howl of the second wolf came.

The buck was alone again. The wolf had vanished, turning back to join the other. Their cries came together now and the sound was different. There was a new running, a new chance. Perhaps they had struck the trail of the old doe. Perhaps one of the yearlings had blundered into the deep drifts along the canyon's north side. As the buck strained to listen, the howling changed its pitch once more. Then it stopped abruptly. The sudden silence

struck terror anew into the buck and he whirled to run again.

Now he paused to test the air. Nothing. Nothing following. He listened his ears flicking nervously, now forward, now back. A start. There was a sound just ahead. What? He moved forward. Something moving -- but what? A step more forward. His muscles were bunched to leap, to turn, to run again. But what was ahead? A juniper branch just by his head moved in the slight breeze. The same puff of air brought the scent to him. He relaxed. Deer. His own kind. He was hungry now. There had been little time for browsing that night before the wolves had come and the running began. He dropped his head to the snow and began to muzzle down through it, cutting with his hooves, searching for a mouthful or two of the dried grasses beneath. He drifted on up the canyon, joined now by three other deer. Two does and a yearling. The little band was not quite at ease. They traveled in their usual order now. The does moving ahead, nervous and alert, pausing to stare at each moving cloud shadow -- the buck keeping aware of their movements, followed, taking the best of the browsing. Occasionally they would all stop together as if at a signal to listen and taste the the air. Twice, they had bolted ahead, running for a hundred yards or so, but keeping together this time. At one point on the trail, the buck had done an unusual thing. He had made his way to the head of the file and stood by the side of the narrow trail. He let the others file past, smelling at each. When they had passed, the others turned to watch as the buck moved back a short distance down the trail. He stood a moment, peering into the darkness behind them. Then he snorted, turned again, and came on. The herd drifted before him. He knew now that there was a doe missing. The wolves would not follow them again that night.

There was a change coming into the air. It was lighter now. The sky to the east was beginning to glow and to come alive. "It is like the color of this shell pendent around my neck," the boy thought. He looked at his grandfather crouched close by him under the low-hanging juniper boughs. "I wonder if my grandfather is as cold as I am? I wonder if the Deer People will come? I wonder if they have heard our prayers? There is so much to remember."

The grandfather watched the boy with pride in his heart. "This is a good one, this Tuvala, this Bow-boy. He listens well and he remembers. I wonder only if I have remembered to tell him all he should know -- about the trailing, about the spear-song that makes the deer stop to look toward the hunter? Ah well, there are others to teach him when I am gone. There are things for him to learn -- for himself. But his heart must be good...."

All thoughts left the old man's mind, except one: the Deer People have come. They were there, not twenty yards away, coming out of the brush down the canyon. Coming fast now, does in the lead. They were hurrying toward the smell of water. The buck had smelled it first and had urged the others on. It was lighter now than when they usually came to this place for their drink, but the running had made them thirsty. The air had smelled good. There was no scent of wolf. Only of water and of the juniper thicket ahead. The whole herd was in sight now. The old man held his breathing deep down in his chest. He did not move. He felt the presence of the boy beside him, but did not turn his eyes to look. There was no need. The boy was as silent and as motionless as he.

The herd moved on, coming closer. The leading doe was abreast of them now, perhaps five yards away. She stopped and the rest of the herd froze behind her. They held motionless, here a hoof raised, there a head flung high, poised. The doe slowly turned to bring her gaze full upon -- something. Something beneath the shadow of the juniper, close by the trail. What? The wind told her nothing. There was no sound. Nothing moved. But there was something there. The doe took a halting step forward. Another, and she snorted and stamped. Still no movement, no sound, nothing in the air to tell her of danger. At the rear of the herd the buck too was tasting the air. There was, for him nothing to tell of wolves or even of the missing doe. Nothing in the air but the scent of juniper and of water at the spring. Water! It was getting light and they must get to the spring, drink and get back to the dark thickets of pinyon down the canyon. The buck was the first to move. Now the others broke and began to move. They started on to the spring. As each deer passed the low juniper by the trail side, their heads turned for a brief inquiring look. None stopped again. And then they were gone.

In a moment, the old man released his breath with a gentle sigh. His lips formed the words of the trail song:

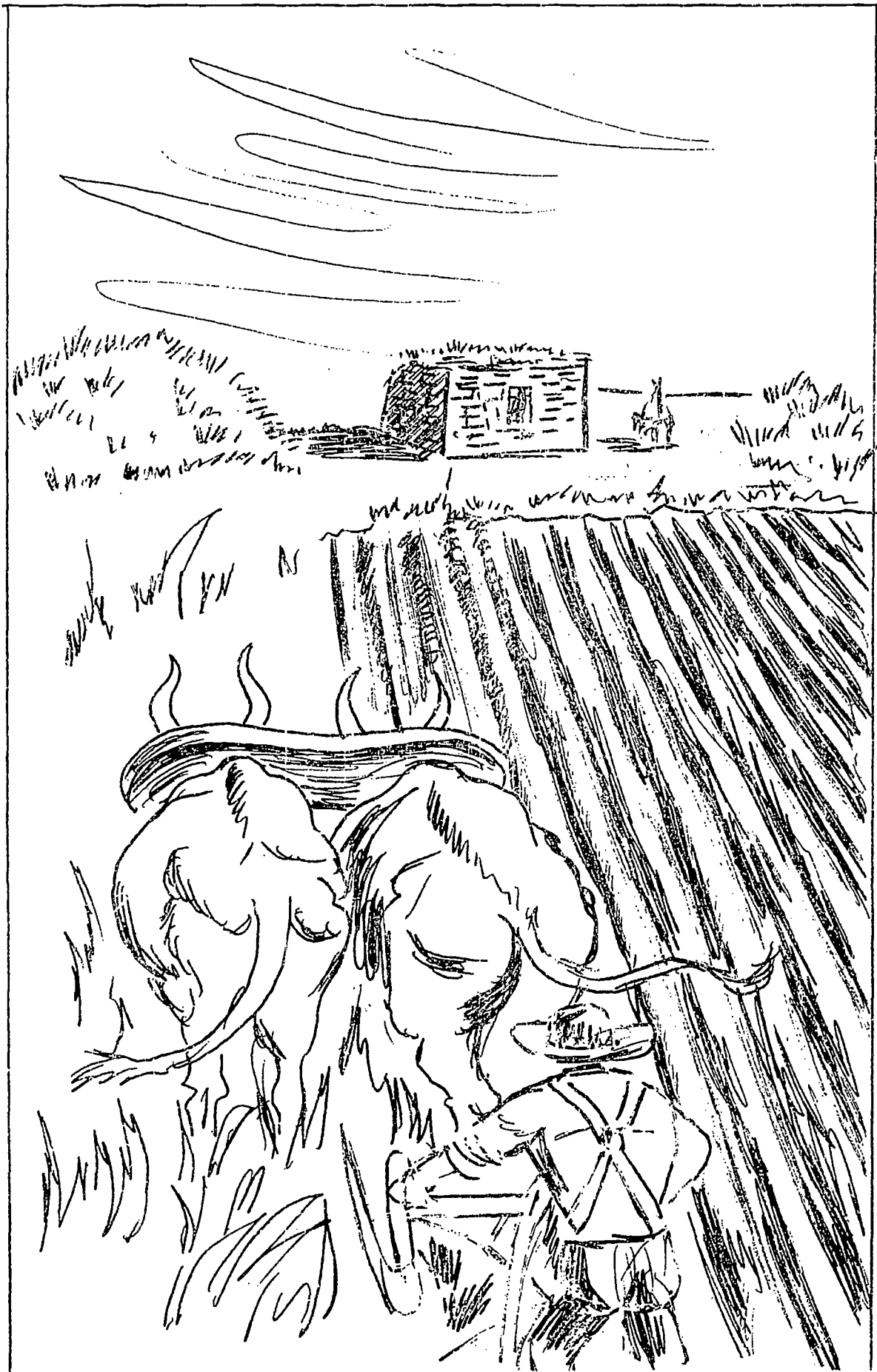
Mother of the Deer People,
Hear our song and know our need.
Guide our steps with the steps of your People.
Our hearts are good.
It is as it should be.

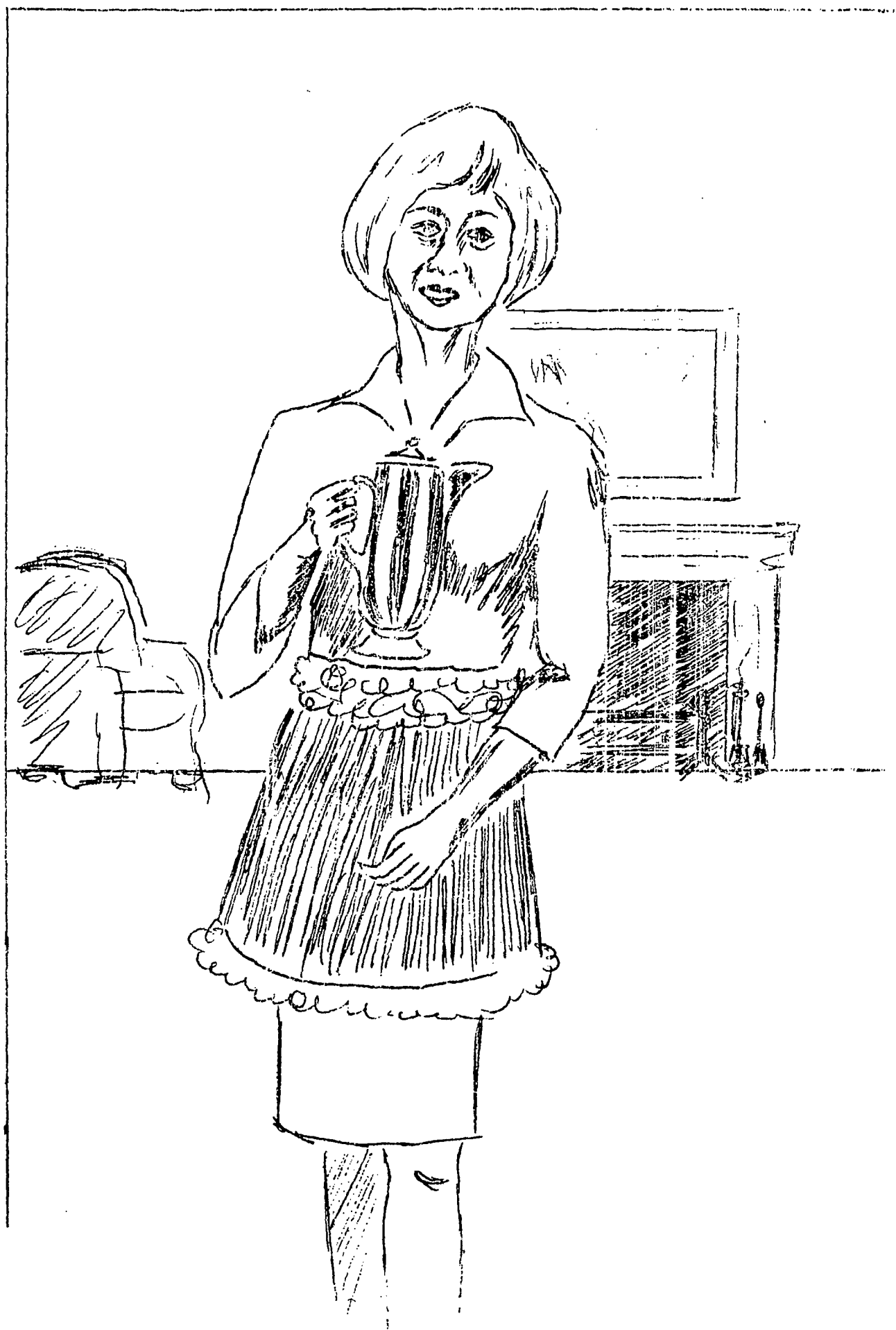
The boy's words, half heard, echoed his. The grandfather turned and smiled. His eyes met that same smile shining in the eyes of the boy. The two stepped out to the deer path together. They paused for the briefest moment, and once more their eyes met. The boy moved slowly past the old man, his eyes bent now to the trail. He began to move up the canyon into the wind, following the deer.

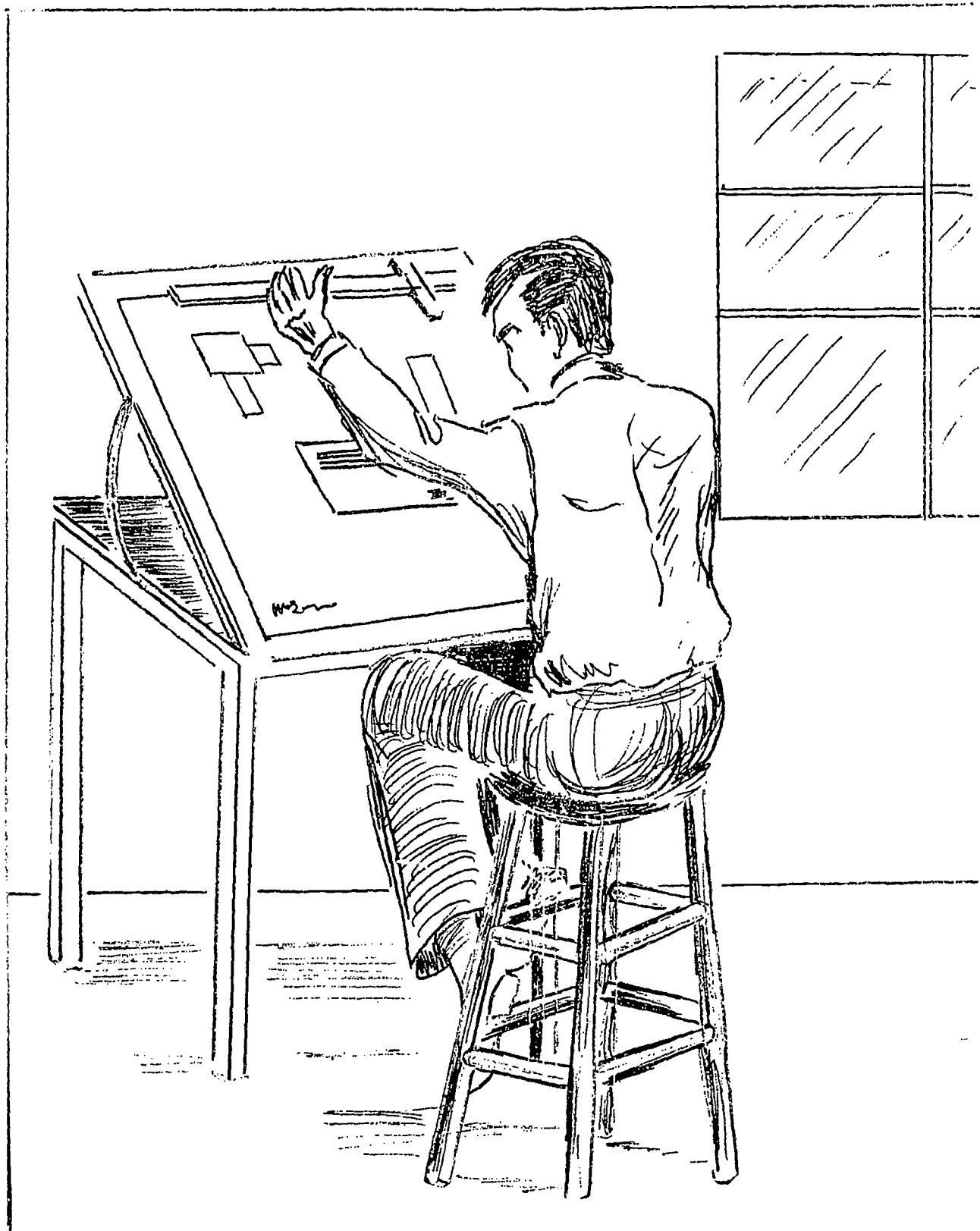
"It is as it should be, Tuvala," the old man whispered. "It is as it should be."





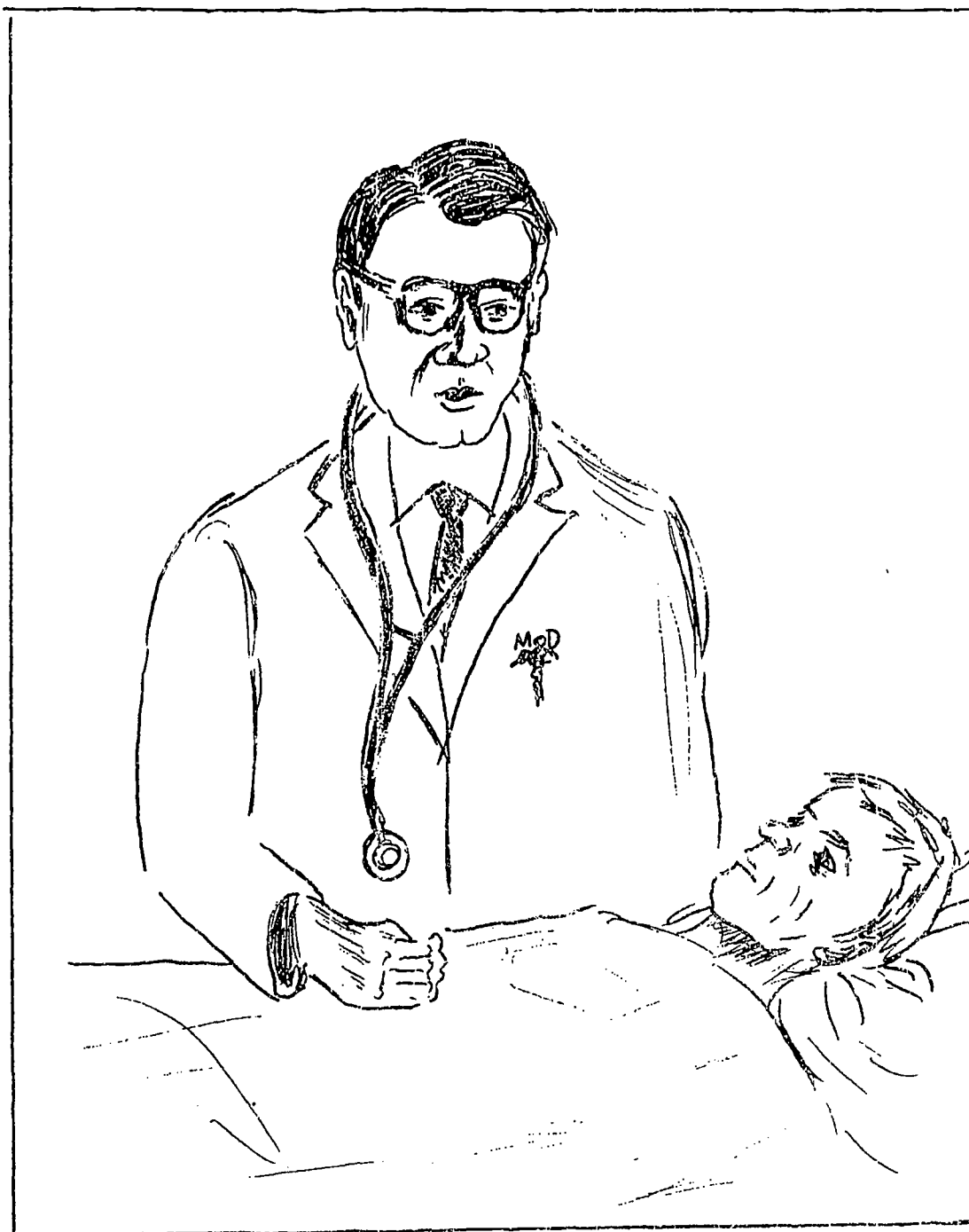




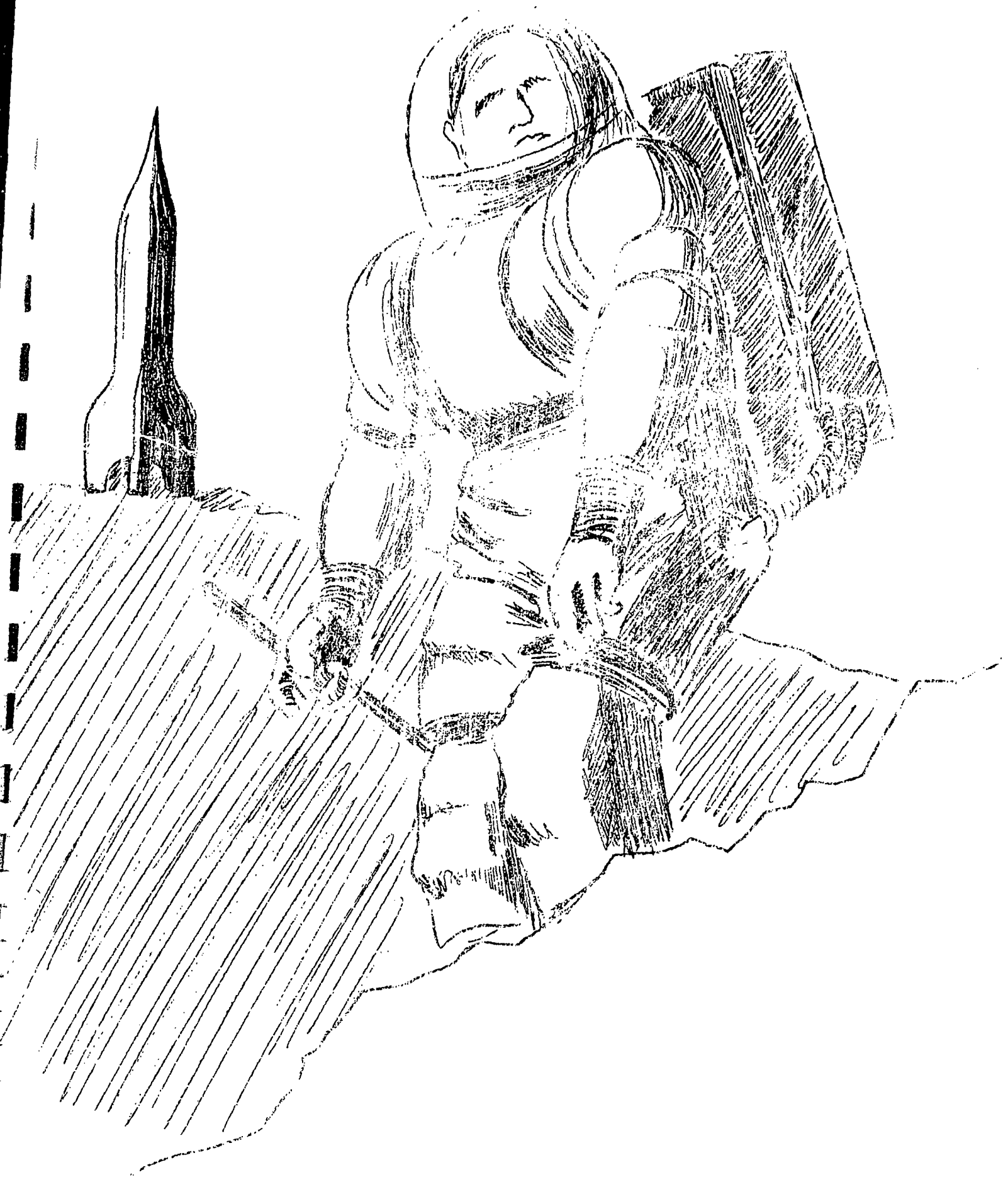


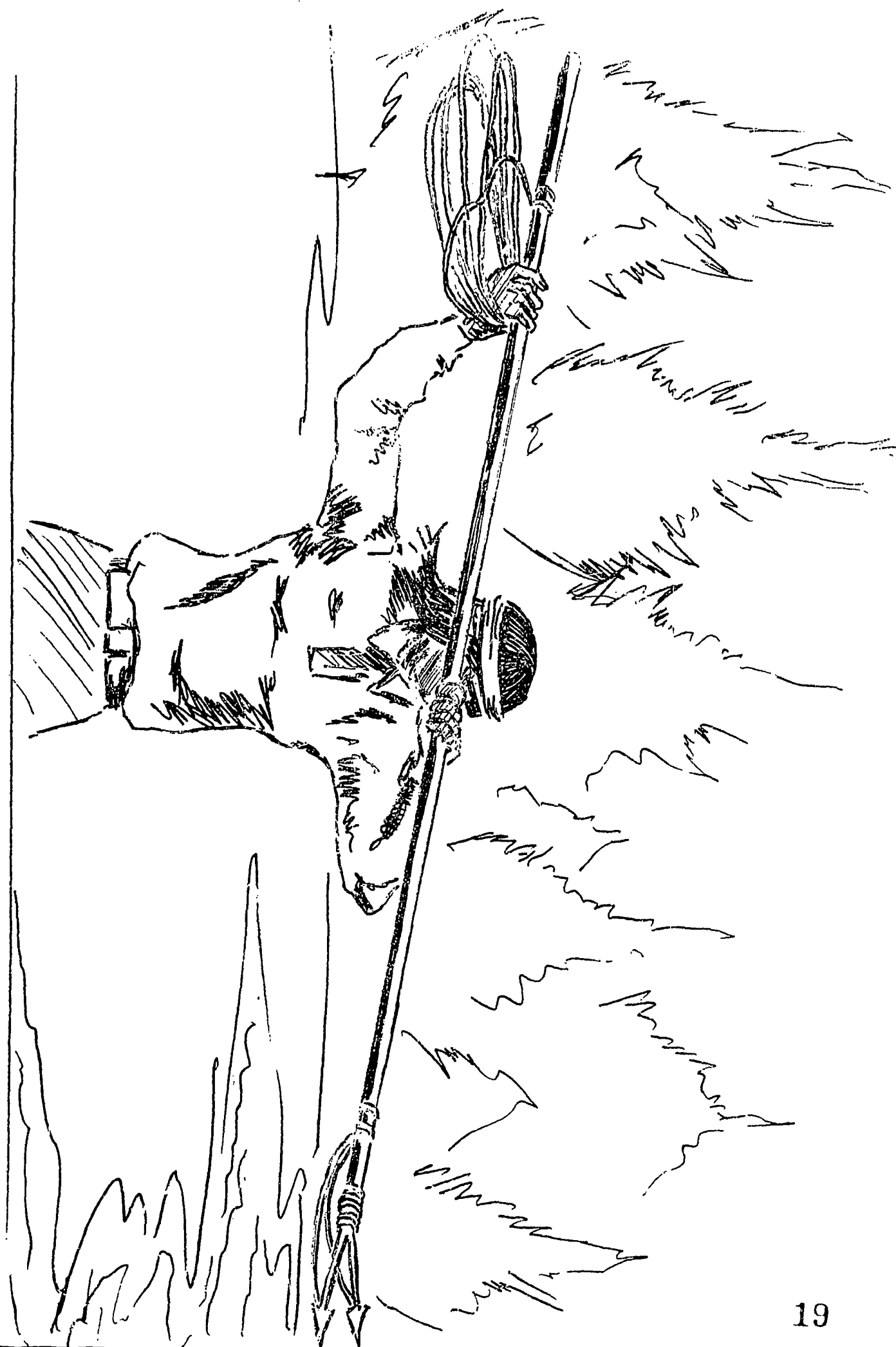
Why did they go?
feudalism?
nationalism?







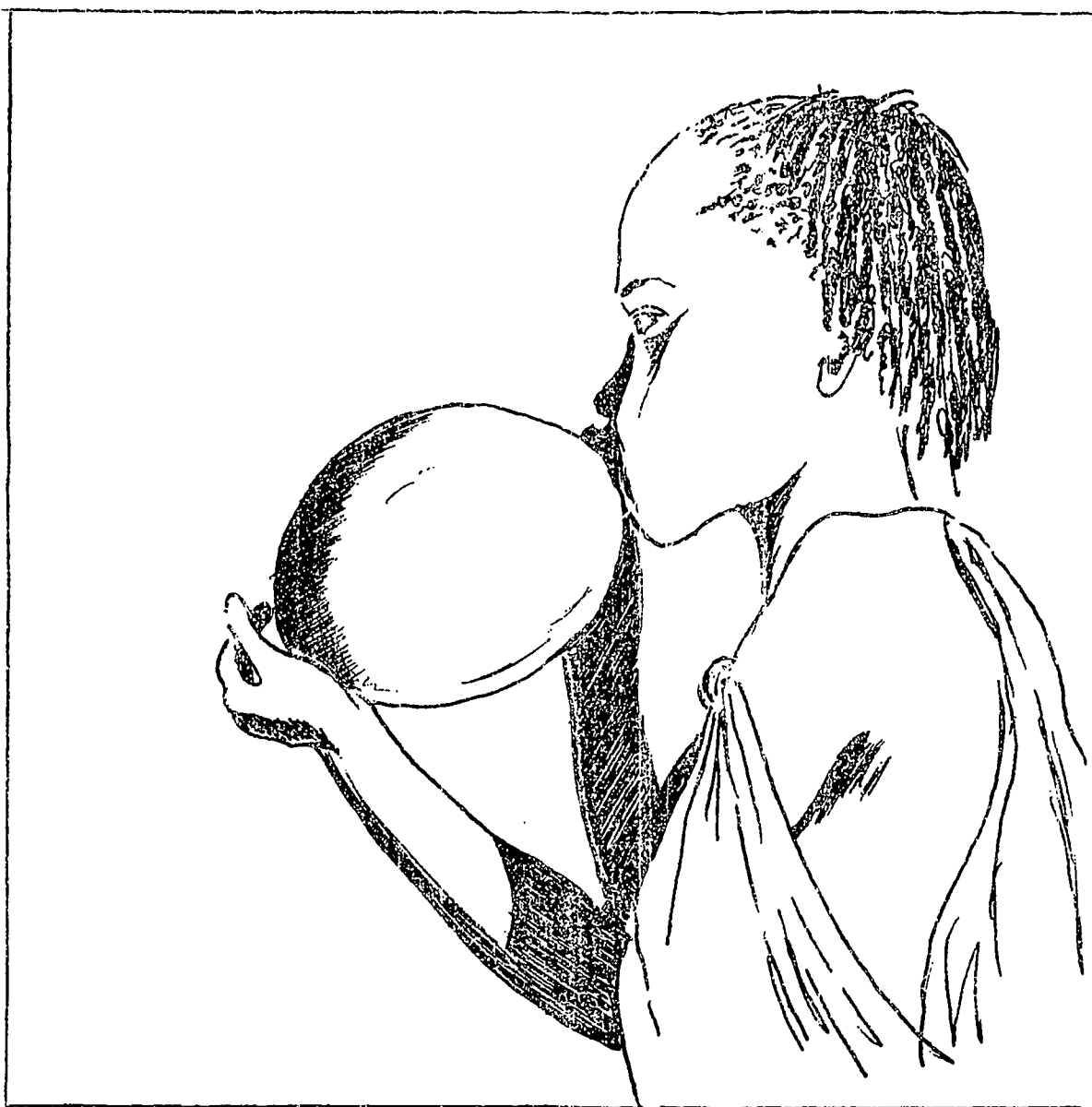












INTELLIGENCE WORKSHEET

I. Group the sketches from the least intelligent to the most intelligent.

Group I

Group II

Group III

II. On what authority or for what reasons are the people in Group I less intelligent than those in Group II?

III. On what authority or for what reasons are the people in Group II less intelligent than those in Group III?

IV. Is it possible that the naked aborigine, who is walking across the dessert, has more intelligence than the astronaut? Try to establish the fact that he is more intelligent.

A N A S A Z I

- (1) He is a scientist who deals only with realities. Sometimes he cannot see the people for the walls.

SECTION I

- (2) The first American settlers entered the region about 1870. Miners, farmers, trappers, cattlemen, even bandits. The people came pouring into the valley and found it to their liking. None of them had ever heard of, or would have been interested in what was hidden there. To them the past was dead and forgotten; they were looking ahead. They were interested only in taming the wilderness and in keeping their scalps firmly attached to their heads.
- (3) Filling it from one end to another and rising even to its vaulted roof, was a silent city of stone. No storm had touched it through the centuries. It seemed as eternal as the ageless rock that protected it.
- (4) Surely its discoverer had not overstated the beauty and magnitude of this strange ruin. There it was, occupying a great oval space under a grand cliff. Wonderful to behold, appearing like an immense ruined castle with dismantled towers.
- (5) Even though the area could only be reached by a thirty mile horse-back trip, it was visited by a surprising number of people in those early years. Some came only to see the ruins, but many came to dig, and on the return trip, the packs often bulged with things taken from the ruins. Priceless artifacts, which had so long been unmolested were thoughtlessly carried away.
- (6) During the following three-quarters of a century many other Spaniards must have seen the Mesa Verde, for there was much exploration in the region. Sometime during this period, the mesa was given a Spanish name meaning "green table". The Spaniard who named it is unknown. Possibly he named it after climbing to its summit, for from the valley below it is not so evident that the top is flat and eternally green.
- (7) In stopping to take a breath, I happened to glance up at the canyon wall. I wish I could tell you what I saw there, just as I saw it, on that first morning, through a veil of lightly falling snow. Far up above me, a thousand feet or so, set in a great cavern in a cliff, I saw a little city of stone, asleep. It was as still as a sculpture, and something like that. It all hung together, seeming to have a kind of composition; pale little houses of stone nestling close to one another, perched on top of each other, with flat roofs, narrow windows, straight walls, and in the middle of the group, a round tower.

SECTION II

- (8) The stones are carefully dressed and often laid in regular courses; the walls are perpendicular, sometimes leaning slightly inwards at the same angle all around the room - this being part of the design. All the corners form almost perfect right angles, when the surroundings have permitted the builders to observe this rule.
- (9) The one door to the room is very small, measuring only sixteen inches in width and twenty four inches in height. The door sill is almost three feet above the floor.
- (10) There are no windows in the house and it has no firepit. The room is small, not over six feet by eight feet in size and the roof is so low that the husband will have to duck his head to miss the beams.
- (11) These towers are spectacular, impressive, and mysterious.

SECTION III

- (12) Two ingredients are needed for actual construction - clay and a tempering material.
- (13) With the palm of her hand she rolls it on a smooth stone until she has a rope of clay smaller in diameter than her little finger and several inches in length. The paste is so strong that she can pick the roll up without breaking it.
- (14) At last the pots are ready for decorations and this is the part the potter likes best of all.
- (15) If they were intended for cooking purposes, they would not be painted, since the soot of a cooking fire would quickly obliterate any design. But vessels intended for storage, for water - carrying, or for religious uses, were generally decorated. This had to be done before the pottery was fired, since vessels decorated after firing would not hold their designs.
- (16) The greatest need is for the large water jars.
- (17) Actually, pottery provides an excellent key to the development of an ancient culture. Important factors make pottery valuable to the archaeologist. One is that at any given time, nearly everyone in an ancient culture tends to make pottery of the same general style. The second is that clay vessels are easily broken, so that a pottery - using civilization must make a great many of them. The third is that potsherds themselves are practically indestructible, and even after thousands of years of burial can be studied and classified.
- (18) Weaving, curiously, was considered man's work. The looms were usually set up in the kivas, where men produced light cotton blankets, kilts, and breech cloths.

SECTION IV

- (19) There is no repairing or building of houses and pottery is seldom made during the summer months.
- (20) The bleak, uncomfortable winter is over; everything in nature indicates that a new year and a new life are beginning. In March, the sun begins to be warm. Not every day in March is warm though. A clear blue sky turns black in only a few minutes and heavy wet snow swirls into the canyons. The snow soon changes to rain, then a cool breeze swings down from the north and the rain becomes icy pellets of sleet. In a few minutes the clouds blow away and the warm sun shines again on the dripping, steaming world. Sometimes during the night, warm, wet snow falls, snow so heavy that its weight snaps limbs from trees. The warm rocks and the bright sun melt it rapidly and often there is a roaring waterfall over the front of the cave as the water rushes off the mesa top.
- (21) The early summer is dry and warm. Little rain can be expected until July, sometimes it does not come until August. June is the hottest month of the year. The sky is cloudless and the sun beats down day after day. The air is dry and a light breeze always blows across the mesa top.
- (22) With the arrival of autumn the finest weather of the year begins. For almost three months it will continue, until winter sweeps down out of the north. In early September the days are still warm but the nights have a pleasant coolness. As the season progresses, the daytime warmth continues, but the nights become cooler and cooler. By October they are crisp and finally there is frost. The mesas flame with the colors of autumn, the distant mountains are cloaked with a blue-grey haze and for weeks the people enjoy the brisk and invigorating weather of Indian Summer. Late in October or November there may be a quick flurry of snow, a warning of what is to come, but it disappears as quickly as it came. Far into autumn the warm days last; sometimes the winter storms do not begin until after the sun has started to return from the south.
- (23) During the late fall the weather has grown colder and colder, and now in December, comes true winter. Cold winds sweep down from the mountains to the north, bringing the snow; soon the mesa tops are white. When the snow reaches a depth of a foot, it is considered heavy, but if it reaches a depth of two feet or more the people talk excitedly about it and the old men begin to recall the heavy snows of by-gone days.

SECTION V

- (24) Pueblo hunters brought back bear, elk, buffalo, wolf, mountain sheep and other animals for meat.
- (25) Since game was scarce, meat was seldom obtainable and formed as small a fraction of the diet as did wild plants.
- (26) The early spring plants brought a welcome variation to their restricted diet. Innumerable plants are edible and by countless generations of experimenting, they have discovered their good qualities.
- (27) The country could not have supported large numbers of people living entirely off wild plants and animals. They didn't have permanent streams of water in which they could build irrigation dams and extensive canal systems. Their water supply was limited.
- (28) Most cultivated plants will not survive very long, in most areas where they are raised, without the help of man.
- (29) Then invention of the stone hoe made cultivating the fields easier and produced a bigger yield of food.
- (30) They depended upon winter rainfall and snowfall, stored in the ground, to start their plants in the spring, and late summer rains to finish the job. In some areas they did put up small check dams which captured water from summer rains and spread it over their fields. Their living depended upon the plants they cultivated - corn, beans and squash.
- (31) Storage must have been of great importance, since grain designated for winter food, as well as seed corn, had to be preserved. Also, it is probable that these ancient farmers accumulated large reserves to tide them over years when the crops failed, as do their present-day descendants.

SECTION VI

- (32) The fields are never left without watcher. All day long someone is on guard and even during the night the young men and boys take turns watching the precious crops.
- (33) Corn is sometimes planted almost a foot in the earth.
- (34) Usually the clearing of new land is done in the late winter and early spring when the cool damp weather is in their favor.
- (35) Life depended on agriculture. There was dry farming on the mesa tops, but irrigation was particularly well developed here. A broad, shallow ditch, some four miles long, and with a very regular gradient, has been found on the mesa. Apparently, water was turned out on the corn fields from the ditch. There were also check dams, which caught the run-off of heavy summer rains and made it available for the crops. They served a further purpose in conserving soil which might otherwise have been washed away.

All the farming tribes used a straight pointed stick for some part of the routine.
- (36) They were flood-water farmers, depending upon floods spreading out over the canyon floors to water their crops. But when arroyo cutting began, these plains not only were cut by deep gullies, but the water table was also lowered so much that the fields became useless. This was a slow process.

SECTION VII TRADE

- (37) The mesa lacks certain important things; salt, sea shells, cotton, turquoise and obsidian.
- (38) Shells were also highly prized by the people. In most villages shell ornaments were even more abundant than those of turquoise. Shells were softer than turquoise and thus were easier to cut and make into beads, bracelets, and pendants. Shell pendants have been found carved in the shape of birds and animals and various geometric designs. Bracelets cut from large glycymeris shells were widely used.

SECTION VIII

- (39) They seem rather short, the men averaging about five, four inches in height and the women about five feet. They are heavy set, and as a rule, they are short, stocky people. The skin color varies from light to dark brown; some are so dark they seem almost black. The eyes are also brown and the hair varies from dark brown to a deep lustrous black. The people have broad heads and the back of each head is flattened. The faces are broad and the cheek bones are prominent. Occasionally, we notice "slanting" Mongoloid eyes. The people seem to have certain Mongoloid tendencies, although they are not a pure Mongoloid type.
- (40) To the people, their highest goal is marriage, a home and children.
- (41) The pueblo society is matrilineal.
- (42) The close relationship of the young child to the supernatural served as a deterrent to corporal punishment. Discipline, when it was administered, was frequently done by a relative more remote than a parent, such as an uncle or aunt.

Education of the young came through parents and relatives. Those people that had the most elaborate development of solidarity gave their young the greatest amount of formal education or schooling.

SECTION IX

- (43) At any time of the year a strong odor of decaying animals and vegetable matter and human waste fills the cave. Out in front is the great trash pile and in the rear is the trash room where the turkeys roost and where some of the dead are buried. In the summer the odor is not so bad, for the women often sweep out the houses and courts and throw the trash out in front of the cave where the hot sun rays dry out the waste materials. In the winter there is less of this cleaning and the trash and filth accumulate. The dampness in the air causes mold and mustiness and when the warm wet days of late winter come, the air is foul with the odor of decaying matter.

The people do not notice the odor. Their first breath of life was like that and they merely think it is the way air smells.

- (44) Children suffer a great deal and all through the winter they sniffle and cough with colds. Sometimes the colds settle in the sinuses, in the ears or even in the lungs, bringing complications against which the priests are powerless. Often the end is slow in coming. When a cold settles in the middle ear and an abscessed mastoid results, the terrible agony may last for weeks before the inevitable result brings an end to the suffering. Sometimes the end comes quickly and a mother hardly realizes that her baby is sick before it is gone.
- (45) The serious illnesses, which strike so mysteriously, are not natural and are considered the result from the evil practices of witches. Only the medicine men with their supernatural powers, can combat the witch-caused diseases and the medicine men and the medicine societies are busy with their healing ceremonies.
- (46) Many of the older people are suffering from the agony of decayed and abscessed teeth. All their lives, they have been eating the gritty corn bread that has come from the soft grinding stones. As a result, their teeth are badly ground away; sometimes they are ground down to the gums. With the loss of the tooth enamel, decay has come and now aching and abscessed teeth are the result.
- (47) The medicine men have little success in their efforts to combat agony of an aching or abscessed tooth. Finally, if the patient can bear the pain no longer, the tooth is extracted, and then the suffering person has two choices. One method is to knock the tooth out. One end of a piece of bone or hard wood is placed

against the base of the tooth and an obliging neighbor taps the other end sharply with a stone axe. Instantly, the tooth is gone. The other method of extraction is equally simple. A long, strong piece of sinew is obtained and one end is tied securely around the aching tooth. The other end of the sinew is tied to a large rock. Then the rock is thrown away. And with it goes the tooth.

- (48) Many of the people, especially the older ones, are suffering from rheumatism and arthritis. Limbs are swollen and stiffened or even partially or completely solidified with arthritis. When these conditions come, the bent and crippled oldsters seldom venture far from the cave. They are cared for and honored by their children and their clan relatives.

SECTION X

- (49) The fertility rites are especially important for unless the gods of fertility and reproduction are pleased, the seeds in the ground will rot.
- (50) As soon as the meal is ready, the man of the family selects a sample of food from each pot. These he throws into the fire as an offering to the gods. Then eating beings.
- (51) Many misfortunes were caused by witches, who were evil human beings with only one desire - to injure and destroy the people. Winter was the season when witches were most active, so it was a time of fear and dread for the inhabitants of the town.
- (52) As the walls of the house rise, prayer sticks are buried in the corners. These small, carved sticks are offerings to the gods and assure the stability of the house.
- (53) The bodies were tightly flexed, with knees drawn up almost to the chin. Bodies were usually wrapped in fur blankets, but occasionally tanned deer skins were used. In some cases a large, twined bag, split down one side, provided an inner covering. A weapon of some sort, digging sticks, sandals and beads were also found in the proximity of the burial.
- (54) Only the medicine men, with their supernatural powers, can combat the witch - caused diseases and the medicine men and the medicine societies are busy with their healing ceremonies during most of the seasons.
- (55) In the early winter one important ceremony is held when the priests "turn back the sun". Everyday since early summer the sun has moved farther and farther south along the western horizon. At last, in late December, he has reached the point beyond which he must not be allowed to go. The priests know the spot well: it is on the horizon, directly over a certain mark on the opposite canyon wall. When the sun reaches this spot each year, the priests perform the ceremony that causes him to cease his southern journey and start back to the north again. If the priests fail to please the Sun Father, or if he is angry with people, he will continue his journey to the south and perpetual cold and darkness will envelope the earth.

PAGE -2-

Never yet have the priests failed; always the sun has been pleased and after reaching that certain spot he has reversed and started back to the north to bring the long days and the warmth of summer.

SECTION XI

- (56) The people were faced with three terrors - lack of food, lack of water, and the wrath of the gods.
- (57) The departure seems to have been an orderly one, for the people took most of their possessions with them. There does not seem to have been any one, great migration. Rather, it appears that first one section, and then another, was abandoned as one or more small groups moved on.
- (58) Actually, they moved farther and farther south and perhaps to the southeast and southwest, looking for more favorable locations. As they mingled with other groups, they lost their identity, but doubtless, there is still a strain of Mesa Verde blood in the present Pueblo Indian population.

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- (47) Ibid., p. 122
- (48) Ibid., p. 123
- (49) Ibid., p. 123
- (50) Ibid., p. 69
- (51) Ibid., p. 47
- (52) Ibid., p. 39
- (53) Ibid., p. 63
- (54) Wormington
Op. Cit., p. 45
- (55) Watson
Op. Cit., p. 122
- (56) Ibid., p. 121
- (57) Ibid., p. 135
- (58) Wormington
Op. Cit., p. 96

(59) Ibid., p. 96

ARTIFACT IDENTIFICATION WORK SHEETS

An ARTIFACT is anything made or changed by the hand of man. It is a product of human workmanship designed for a specific use. Sometimes an artifact has an obvious practical use, such as an arrowhead, a planting stick, or a woven basket. Sometimes an artifact has a decorative or an artistic use such as a piece of shell jewelry or the paintings on the plastered wall of a cliff dweller's house. Other artifacts may have a religious or symbolic use. It is harder to determine just exactly what artifacts in this category may have been used for or what their significance was. We can try to put ourselves in the place of the men who made these artifacts and, using all we know about the way in which they lived, make a good guess or theory about the use of the objects. It may be possible that people living today can be found who make and use similar objects. Many artifacts are identified by comparing them with objects found in use by descendents of the original makers. In this way the ARCHEOLOGISTS have learned the use of objects like the cloud blower and the bull roar - not only how they were used by the Ancient Ones, but why they were used and what they stood for. Still other artifacts continue to pose a problem. Some ancient man went to a good deal of trouble to make an object. It may seem useful for a number of different things - or for none. Nothing like it seems to be in use today. Perhaps parts of this object may be missing. Perhaps it was part of a game or just the result of some idle whittling. We can only guess at the identity of these puzzle artifacts - but a good guess backed up by good reasoning may well provide the correct answer.

To attempt to identify any of the artifacts in the kit, you, as the investigator, should use all you have learned about the way of life of the Cliff Dwellers of Mesa Verde. Think, too, of tools and other objects that we use today, things you may have used yourself or may have seen in books, museums or in the hands of today's workers or artists. Think of articles described in stories you have read or heard. Try, too, to put yourself in the place of those Ancient Ones. Pick up the objects, feel them. Use them. Then try to put your thoughts about the object into words. What did you use it for? How does it work? How well does it work? How was the object made? Do we use something like it today? What does the object tell you about the people who made it? Were they clever? Were they good workmen? Were they good artists? An artifact can pose many questions for you. The answers you arrive at may tell you a great deal about the object - and about the people who made it. Most important, it may tell you many things about all men and about the immense journey man has made through time from the age of stone to our modern age of steel and the atom.

For each artifact you will find an Identification Work Sheet. The procedure on each sheet is much the same. First, you are to examine the

artifact carefully. Touch it, hold it, get the feel of it. Then with the object before you, write a clear description of what you have seen and felt. Try to write a description so that any of your classmates would know immediately what the object is you are describing. If your description is a good one, a classmate, who is a good artist, should be able to make a drawing of the artifact - from your words alone. There is a space on the Work Sheet for you to try a simple sketch of the object yourself, if you wish. Perhaps you would like to make your drawing first and then write about the artifact. Sometimes it is easier to describe and then draw. Which ever method you choose, if you make a sketch, keep it simple. The drawing is to help identify the object and a good representation is more important than fancy art work.

After you have described how the artifact looks and feels, try to think how it was made. What materials were used? What tools were needed to make it? What skills must the maker have had? Could you make one like it? How? What materials would you use? Tools? Why would you use it?

After describing and working with the artifact, you may have a good idea - or theory - about its use. Perhaps you could give the artifact a tentative or trial name - something that you believe the object should be called. When you have all the information on this artifact, you may want to give it another name that better describes it.

On the Artifact Clue Sheet, there are some clues and questions to aid in the identification of your artifact. They may tell where the object was found and how many others like it have been found. Perhaps other objects have been found with it which may help in the identification of your artifact. Information may be given as to the age of the object and how that was determined. An archeologist in the field might use this information to aid him in his theories.

Now in your investigation of an artifact you have described how the object looks and feels. You have tried to determine how it was made and from what material. You have read the information regarding the circumstances of discovery. Now you are ready for a final theory of use and significance. Here are three most important questions for you to try and answer. How was the artifact used? Why did it take the form it did? What does the artifact tell us about the people who used it?

Use the facts you have been able to observe, the information given, your own imagination and see how close you can come to identifying the artifact correctly. If your theory is a good one, clear and well defended, it can be just as acceptable as the one presented on the Theory Card for that very artifact.

Student's Name: _____

STUDENT'S ARTIFACT IDENTIFICATION WORK SHEET

Artifact Number: _____

Name or Names of Artifact: _____ or
(Just by looking at the
artifact, what would
you call it?) _____

Description of Artifact: _____
(Shape, size, weight,
color, markings,
materials, etc. _____

(Sketch.)

Manufacture of Artifact: _____
(How do you think it
was made or prepared?) _____

Materials Needed: _____
(What was used - or
could be used to make
this artifact? _____

Tools Needed: _____
(What tools did the
Ancient Ones have
to produce this artifact?) _____

THIS COMPLETES YOUR OBSERVATION AND DESCRIPTION OF THE ARTIFACT. NOW
TURN THE SHEET OVER TO WORK OUT YOUR THEORY OF IDENTIFICATION AND USE.

Discovery and Dating of Artifact: FIND THE DISCOVERY AND DATING CLUE SHEET FOR YOUR ARTIFACT. MAKE SURE THE NUMBER IS THE SAME. THIS CLUE SHEET WILL DISCUSS THE CIRCUMSTANCES UNDER WHICH THE ARTIFACT WAS FOUND AND THE METHOD OF DATING THE ARTIFACT. THESE FACTS MAY GIVE SOME HELP IN DETERMINING THE USE AND SIGNIFICANCE OF YOUR ARTIFACT.

Use of Artifact: (How do you think this artifact was used? Is it a whole object, or simply a part of something. Could it be a material out of which something could be made? What could the artifact be used to make or do? If you think you have found a use for the artifact, try it out. Describe your try.)

Conclusion: (What does the artifact and its use tell you about how the Ancient Ones lived and worked? What does it tell you about their intelligence? Can you make any statement about travel, trade, war, religion or invention based on this artifact? Do we have tools or materials like this today? How do they compare? Was this artifact important to the Ancient Ones? Why?)

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